



National Aeronautics and Space Administration

Administrative Controls for Fire Safety Hazards

Senior Management ViTS Meeting

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Fire Mishap # 1

Incident: Fuel supply line fire at GRC Lewis Field Picnic Shelter

Date: August 28, 2015

Type: Close Call



What Happened:

Gas supply line under the front control panel on a barbeque grill caught on fire even though the control knobs had been turned off after use. Operator closed the supply line valve which extinguished the fire.

Applicable Preventive Administrative Control:

Routine maintenance and inspection schedule for safe functioning of the equipment. Pre-operator checks are included in the grill operating instructions. These instructions were not posted at the grill site.

Fire Mishap # 2

Incident: Debris fire in testing facility piping trench

Date: September 8, 2015

Type: Close Call



What Happened:

During a test run in the 9x15 Low Speed Wind Tunnel, smoke was observed originating from a pit under a leaking 450-pound combustion air valve as viewed from a camera in the test section. Further scanning with the camera showed dust or particulate so the decision was made to power down the drive rig and the wind tunnel. Security first responders rapidly extinguished the fire which saved the equipment and facility from costly damage.

Applicable Preventive Administrative Control:

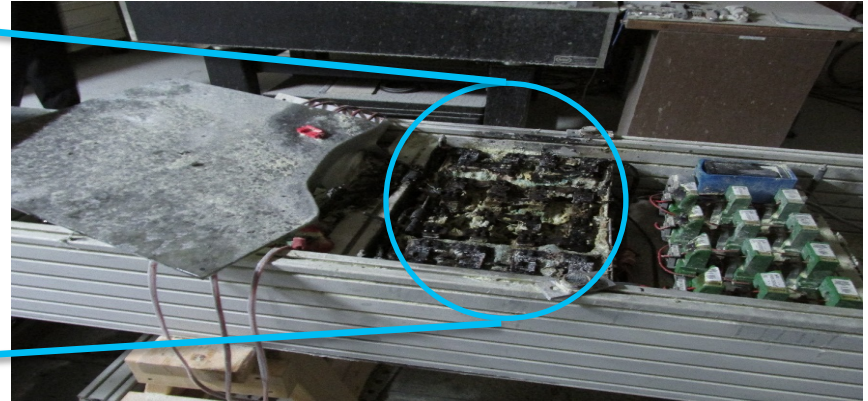
Routine inspection and cleaning schedule of piping trench in the test facility for the removal of oil saturated debris, including inspection of cleanliness of area as part of pre-operation checks. It was determined that a sensor in the piping misreported pressure and temperature. It has been recalibrated.

Fire Mishap # 3

Incident: Batteries on research equipment overcharged and caught fire

Date: October 12, 2015

Type: D



What Happened:

An area fire alarm alerted emergency dispatch of fire in a research cell of Building 5. Security staff responded to the alarm, unplugged the electrical cord to the battery charger, and extinguished it with two fire extinguishers. Batteries were overcharged when charger left operating over a weekend. Fire suppression damaged adjacent equipment and required \$45,000 in clean up costs.

Applicable Preventive Administrative Control:

Written procedure for charging batteries that limits the charging time and ensures equipment and charger are deactivated after full charge, including the charging procedure as a pre-fire plan, the use of venting facilities, and an emergency contact list. The battery and charging system are currently being examined for functionality.

Lessons Learned

Things that went right

- All fires were immediately detected by operators or fire alarm systems.
- All fires were immediately extinguished by operators or emergency responders.
- Damage was quickly assessed and equipment returned to operating status within a few days.



Lessons Learned

Opportunities for improvement

- Communicate written maintenance schedules and procedures to ensure safe functioning of the equipment
- Facility cleanliness inspection checklist prior to operations
- Written hazard analysis that includes possibility of flammable gas leaks, combustion of debris, and potential failure of alarms
- Separate storage of idle equipment from operating equipment
- Attention to detail in facility walkdowns prior to test
- Thorough safety audits and hazard analysis by safety professionals

Summary

- Administrative controls are crucial for the prevention of fires by establishing well-written pre-fire plans that address pre-operation checks, maintenance services, and rapid detection of incipient fires.
- Informal administrative controls can be beneficial in home holiday safety as well, mainly by applying these same principles to Christmas trees, home decorative lighting, and general holiday safety.